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2nd International Workshop on Plasticity, Damage and Fracture of Engineering Materials

Editorial

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This special issue contains a selection of research papers presented virtually at the 2nd International Workshop on Plasticity, Damage and Fracture of Engineering Materials organized by Middle East Technical University in Ankara, Turkey on 18-20 August 2021. Participants were given live and pre-record options to present their contributions. Due to the challenging conditions caused by the COVID-19 pandemic throughout the world, the workshop is held online to contribute to the dissemination of scientific progress in the fields of plasticity, damage and fracture of engineering materials. There were 8 keynote lectures, 35 contributed talks and 53 pre-record presentations published on the Youtube channel. 117 researchers from 28 different countries participated in the meeting and only the papers that are accepted after a peer-review process are published in this special issue.

After the successful organization of the first version of the IWPDF workshop held on 22-23 August 2019, in Ankara with various activities and trips, it has been a challenging task to organize the 2nd version due to pandemic conditions. However we are quite glad with the decision of organizing the event virtually, which attracted high level of contributions from all over the world. The scientific level of the workshop was set by the brilliant keynote lectures given by Prof. Laura De Lorenzis (ETH Zürich, Switzerland) on phase-field modeling of brittle fracture, by Prof. Odd Sture Hopperstad (Norwegian University of Science and Technology, Norway) on plastic flow and fracture in anisotropic aluminium alloys, Prof. Erdogan Madenci (University of Arizona, USA) on recent progress in peridynamic theory, by Prof. Emilio Martínez Pañeda (Imperial College London, UK) on phase field modelling of corrosion damage and hydrogen embrittlement, by Prof. Dierk Raabe (Max-Planck-Institut für Eisenforschung GmbH, Germany) on multiscale and multi-physics simulations of chemo-mechanical crystal plasticity and phase transformation problems for complex materials using DAMASK, by Prof. Timon Rabczuk (Bauhaus University Weimar, Germany) on machine learning based solutions of PDEs, by Prof. Javier Segurado Escudero (IMDEA-Materials, Spain) on modeling size effects in metals using FFT homogenization and by Prof. Huseyin Sehitoglu (University of Illinois Urbana-Champaign, USA) on exploring the fundamental issues in modeling of twinning in materials. We would like to thank all the keynote speakers for their immeasurable contributions to the workshop.

The organization process of the workshop was made very easy by the kind, attentive and efficient support of the members of the organizing committee: Prof. Mehmet Dorduncu, Mr. Orhun Bulut, Mr. Can Erdogan, and Mr. Izzet Tarik Tandogan. Finally, I would like to acknowledge the support of the European Structural Integrity Society (ESIS) and its president Prof. Francesco Iacoviello for the organization of the meeting and for the publication of the special issue papers in Procedia Structural Integirty Journal.

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